AD-A070 707 ARMY ELECTRONICS COMMAND WHITE SANDS MISSILE RANGE N--ETC F/G 4/2
19702A GSRS, MISSILE NUMBER 301, ROUND NUMBER B-10.(U)
APR 79

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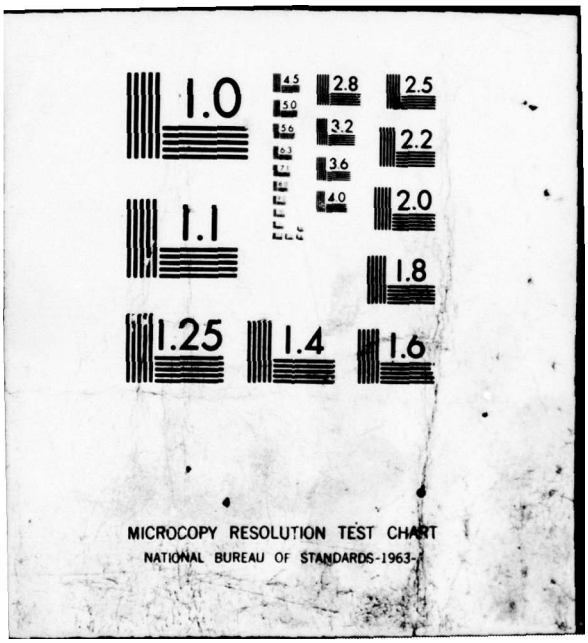
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

1. Ballistics
2. Meteorology
3. Wind

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Meteorological data gathered for the launching of 19702A GSRS, Missile Number 301, Round Number B-10, are presented in tabular form.

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CONTENTS

INTRODUCTION

19702A GSRS , Missile Number 301 , Round Number B-10, was launched from LC-33 , White Sands Missile Range (WSMR), New Mexico, at 1110 MST, 23 April 1979 . The scheduled launch time was 1100 MST.

DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

1. Observations

a. Surface

(1) Standard surface observations to include pressure, temperature (°C), relative humidity, dew point (°C), density (gm/m^3), wind direction and speed, and cloud cover were made at the LC-33 Met Site at T-0 minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

b. Upper Air

(1) Low level wind data were obtained from RAPTS T-9 pibal observation at:

SITE AND ALTITUDE

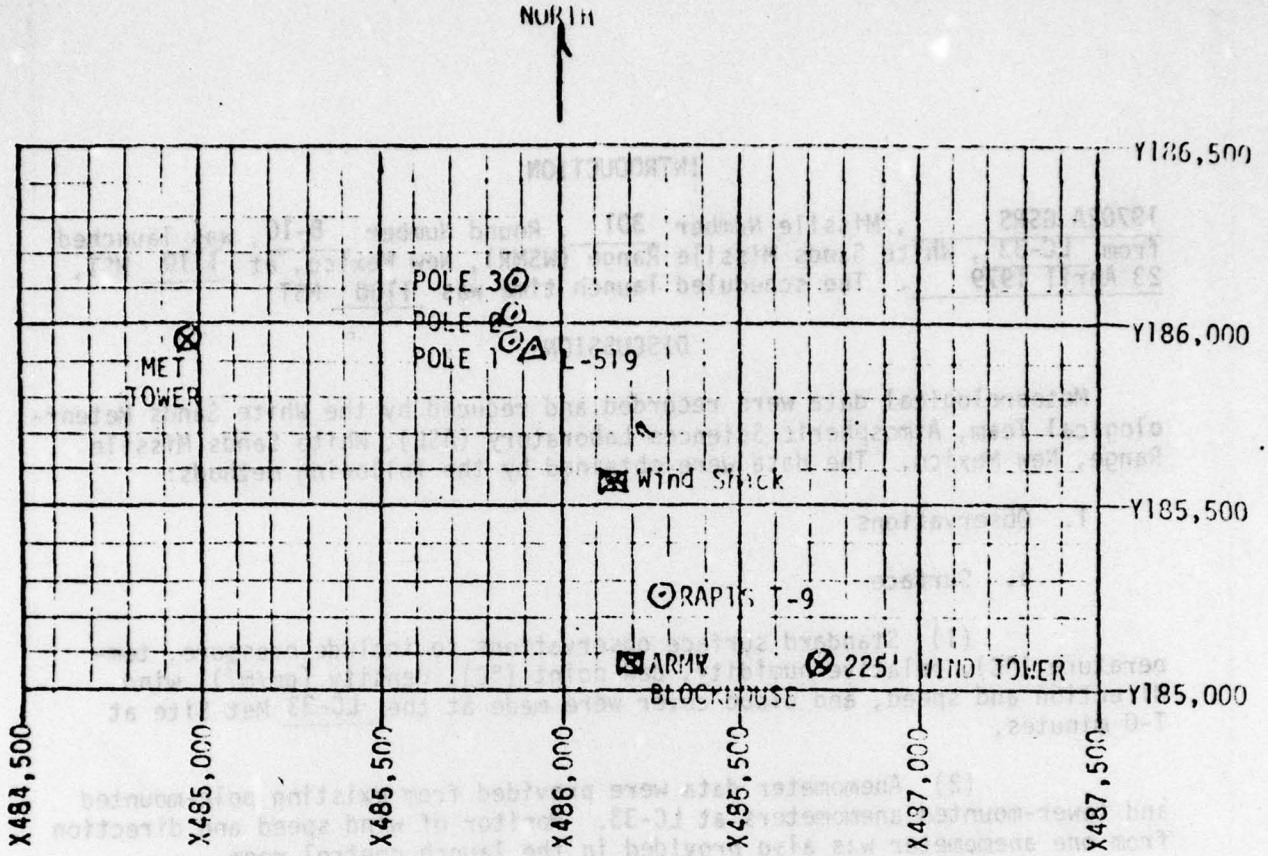
LC-33 1 kilometer (50-meter increments) 1055 MST

LC-33 1 kilometer (50-meter increments) 1110 MST

(2) Air structure data (rawinsonde) were collected at the following Met Sites. Data were collected from surface to 39,500 feet in 500-feet increments.

SITE AND TIME

SMR Met Site at T-0 minutes



1. MET TOWER - 4 Bendix Model T-120 Anemometers at 12 ft, 62 ft, 102 ft and 202 ft with E/A recorders in Wind Shack.

2. POLE ANEMOMETER - Bendix Model T-120 with E/A recorders in Wind Shack

   (a) Pole #1 - 38.7 ft

   (b) Pole #2 - 53.0 ft

   (c) Pole #3 - 83.6 ft

3. 225 FT WIND TOWER - 5 Bendix Model T-120 Anemometers at 35 ft, 88 ft, 128 ft, 168 ft and 200 ft with 5 X-Y visual indicators in Blockhouse.

4. RAPTS T-9 - Radar Automatic Pilot-Balloon Tracking System T-9 Radar

The data are presented in the following tabulations:

ELEVATION	3977.30	FT/MSL
PRESSURE	879.4	MBS
TEMPERATURE	23.0	°C
RELATIVE HUMIDITY	39.0	%
DEW POINT	8.3	°C
DENSITY	1028	GM/M^3
WIND SPEED	2	MPH
WIND DIRECTION	55	DEGREES
CLOUD COVER	1	Cb
CLOUD COVER	1	Cu
CLOUD COVER	8	Ci

TABLE I. SURFACE OBSERVATIONS TAKEN AT 1110 LOCAL TIME, 23 APRIL 1979, AT LC-33, 19702A GSRS (FC), MISSILE NO. 301, ROUND NO. B-10.

LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

POLE #1			POLE #2			POLE #3		
T-TIME SEC	DIR DEG	SPEED MPH	T-TIME SEC	DIR DEG	SPEED MPH	T-TIME SEC	DIR DEG	SPEED MPH
-30	118	04	-30	143	05	-30	98	03
-20	122	05	-20	129	06	-20	137	05
-10	118	05	-10	125	07	-10	132	07
0.0	122	05	0.0	132	06	0.0	131	08
+10	107	05	+10	128	06	+10	120	07

POLE #1 = X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL

POLE #2 = X485,874.93 Y186,012.00 H4033.57 53.0 ft. AGL

POLE #3 = X485,877.29 Y186,116.06 H4063.92 83.6 ft. AGL

TABLE II

TYPE 19702A GSRS (FC) MISSILE NO. 301 ROUND NO. B-10

LAUNCHED FROM LC-33 DATE 23 April 1979 TIME 1110 LST

NOTE: WIND DIRECTIONS ARE REFERENCED TO THE FIRING AZIMUTH _____

OR TRUE NORTH TRUE NORTH.

LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1 12 ft			LEVEL #2 62 ft		
T-TIME SEC	DIR DEG	SPEED MPH	T-TIME SEC	DIR DEG	SPEED MPH
-30	94	01	-30	000	00
-20	120	01	-20	000	00
-10	96	01	-10	000	00
0,0	000	00	0.0	000	00
+10	000	00	+10	000	00
LEVEL #3 102 ft			**LEVEL #4 202 ft**		
T-TIME SEC	DIR DEG	SPEED MPH	T-TIME SEC	DIR DEG	SPEED MPH
-30	98	02	-30	107	03
-20	94	03	-20	110	05
-10	125	03	-10	105	03
0.0	59	02	0.0	073	05
+10	92	05	+10	090	06

WTSM COORDINATES: X484,082.64 Y185,957.73 H3983.00 (base)

TABLE III

TYPE 19702A GSRS (FC) MISSILE NO. 301 ROUND NO. B-10

LAUNCHED FROM LC-33 DATE 23 April 1979 TIME 1110 MST

NOTE: WIND DIRECTIONS ARE REFERENCED TO THE FIRING AZIMUTH _____

OR TRUE NORTH TRUE NORTH.

PILOT BALLOON MEASURED WIND DATA

HEIGHT METERS	DIR DEG	SPEED MPH
SUR	070	02
50	CALM	CALM
100	004	01
150	178	03
200	180	06
250	240	07
300	202	06
350	183	08
400	164	07
450	148	08
500	193	09

HEIGHT METERS	DIR DEG	SPEED MPH
550	184	06
600	176	08
650	183	07
700	195	08
750	183	12
800	195	11
850	207	13
900	215	14
950	207	13
1000	217	12
1050		

TABLE IV

RELEASED FROM LC-33 DATE 23 April 1979 TIME 1055 LST

RELEASE POINT COORDINATES (WSTM) X = 486,037.24 Y = 182,350.16 H = 3977.30

MISSILE TYPE 19702A GSRS (FC) MISSILE NO. 301 ROUND NO. B-10

MISSILE LAUNCHED FROM LC-33 DATE 23 April 1979 TIME 1110 LST

NOTE: WIND DIRECTIONS ARE REFERENCED TO THE FIRING AZIMUTH

OR TRUE NORTH TRUE NORTH.

PILOT BALLOON MEASURED WIND DATA

HEIGHT METERS	DIR DEG	SPEED MPH
SUR	055	02
50	CALM	CALM
100	169	01
150	167	04
200	165	07
250	140	05
300	123	07
350	114	06
400	102	05
450	118	04
500	164	03

HEIGHT METERS	DIR DEG	SPEED MPH
550	171	03
600	154	04
650	211	02
700	208	04
750	211	05
800	204	05
850	206	06
900	208	09
950	211	11
1000	215	15
1050		

TABLE V

RELEASED FROM LC-33 DATE 23 April 1979 TIME 1110 LST

RELEASE POINT COORDINATES (WSTM) X = 486,037.24 Y = 182,350.16 H = 3977.30

MISSILE TYPE 19702A GSRS (FC) MISSILE NO. 301 ROUND NO. B-10

MISSILE LAUNCHED FROM LC-33 DATE 23 April 1979 TIME 1110 LST

NOTE: WIND DIRECTIONS ARE REFERENCED TO THE FIRING AZIMUTH

OR TRUE NORTH TRUE NORTH.

STATION ALTITUDE 3997.30 FEET MSL
23 APR. 79 1100 HRS MST
ASCENSION NO. 70

SIGNIFICANT LEVEL DATA
1130060070
S M R

GEODETIC COORDINATES
32.48034 LAT DEG
106.42307 LON DEG

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT
878.8	3997.3	25.0	7.6	33.0
872.0	4219.5	21.2	3.9	32.0
850.0	4943.0	19.1	4.5	38.0
819.6	5963.3	14.9	3.1	45.0
739.4	8797.0	8.8	1.7	61.0
720.0	9519.1	7.6	-2.7	48.0
700.0	10260.2	6.1	-3.5	50.0
691.4	10612.8	5.4	-4.2	50.0
654.4	12079.7	1.2	-6.4	57.0
645.2	12454.1	.7	-6.2	60.0
627.2	13198.3	-1.7	-7.0	67.0
618.4	13567.6	-2.8	-10.6	55.0
590.6	14760.4	-5.7	-10.8	67.0
556.6	16279.9	-8.9	-24.9	26.0
548.2	16667.0	-8.9	-30.1	16.0
531.8	17440.1	-9.0	-25.8	24.0
500.0	18997.3	-13.1	-30.3	22.0
492.0	19401.3	-13.3	-30.9	21.0
453.8	21404.2	-18.7	-30.3	35.0
438.8	22224.4	-21.3	-31.5	39.0
410.0	23860.2	-25.0	-39.2	25.0
400.0	24450.4	-25.3	-43.1	17.0
362.6	26768.7	-31.0	-47.4	18.0
349.6	27617.8	-32.8	-48.9	18.0
330.8	28890.4	-35.9		
300.0	31099.8	-41.5		
250.0	35068.1	-51.2		
234.8	36420.1	-54.9		
224.8	37333.2	-56.5		
200.8	39689.9	-57.2		

STATION ALTITUDE 3997.30 FEET MSL
23 APR. 79 1100 HRS MST
ASCENSION NO. 70

UPPER AIR DATA
113006070
S M R

GEODETIC COORDINATES
32.48034 LAT DEG
106.42307 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
3997.3	878.8	25.0	7.6	33.0	1022.2	674.2	180.0	2.1	1.000272
4000.0	878.7	25.0	7.6	33.0	1022.3	674.1	180.0	2.1	1.000272
4500.0	863.4	20.4	4.2	34.3	1021.0	668.7	182.4	2.6	1.000264
5000.0	848.3	18.9	4.4	38.4	1008.2	667.0	184.1	3.0	1.000262
5500.0	833.3	16.8	3.8	41.8	997.5	664.6	185.4	3.4	1.000258
6000.0	818.5	14.8	3.1	45.2	986.7	662.3	186.4	3.9	1.000255
6500.0	803.8	13.7	3.0	48.0	972.5	661.0	205.5	4.2	1.000252
7000.0	789.3	12.7	2.8	50.9	958.6	659.8	222.6	4.9	1.000248
7500.0	775.1	11.6	2.5	53.7	944.9	658.6	232.8	6.7	1.000245
8000.0	761.1	10.5	2.2	56.5	931.4	657.3	237.9	8.5	1.000241
8500.0	747.4	9.4	1.9	59.3	918.1	656.1	233.7	8.5	1.000238
9000.0	733.9	8.5	.5	57.3	904.9	654.8	228.5	8.3	1.000232
9500.0	720.5	7.6	-2.6	48.3	891.6	653.7	219.6	7.6	1.000223
10000.0	707.3	6.7	-3.2	49.3	878.3	652.5	216.2	7.2	1.000219
10500.0	694.3	5.6	-4.0	50.0	865.4	651.3	218.4	7.0	1.000215
11000.0	681.4	4.3	-4.7	51.8	853.0	649.7	223.0	6.9	1.000211
11500.0	668.8	2.9	-5.5	54.2	842.2	648.0	227.5	6.9	1.000208
12000.0	656.4	1.4	-6.2	56.6	830.9	646.3	222.5	7.0	1.000204
12500.0	644.1	.6	-6.2	60.4	817.9	645.2	216.3	7.1	1.000202
13000.0	631.9	-1.1	-6.8	65.1	807.3	643.3	207.9	7.5	1.000199
13500.0	620.0	-2.6	-9.9	57.2	796.9	641.4	203.6	7.7	1.000192
14000.0	608.2	-3.9	-10.6	59.4	785.4	639.9	202.5	7.8	1.000189
14500.0	596.6	-5.1	-10.7	64.4	773.9	638.4	217.0	7.2	1.000187
15000.0	585.1	-6.2	-12.6	60.5	762.4	637.0	239.3	7.3	1.000182
15500.0	573.8	-7.3	-16.6	47.0	751.0	635.6	260.6	8.5	1.000176
16000.0	562.7	-8.3	-21.5	33.6	739.6	634.2	274.9	10.6	1.000171
16500.0	551.8	-8.9	-27.5	20.3	727.1	633.4	278.1	11.5	1.000165
17000.0	541.1	-8.9	-28.0	19.4	713.1	633.4	282.4	12.2	1.000162
17500.0	530.5	-9.2	-26.0	23.9	699.7	633.1	290.5	12.5	1.000160
18000.0	520.1	-10.5	-27.4	23.3	689.5	631.5	295.6	13.3	1.000157
18500.0	509.9	-11.8	-28.8	22.6	679.4	629.9	298.1	14.3	1.000154
19000.0	499.9	-13.1	-30.3	22.0	669.5	628.4	295.2	15.3	1.000152
19500.0	490.0	-13.6	-30.8	21.7	657.4	627.8	291.8	16.4	1.000149
20000.0	480.3	-14.9	-30.4	25.2	647.6	626.2	291.2	17.9	1.000147
20500.0	470.7	-16.3	-30.2	28.7	638.0	624.5	291.7	18.9	1.000145
21000.0	461.3	-17.6	-30.2	32.2	628.6	622.9	295.3	18.1	1.000143
21500.0	452.0	-19.0	-30.4	35.5	619.4	621.2	299.3	16.9	1.000141
22000.0	442.9	-20.6	-31.2	37.9	610.6	619.2	304.9	14.6	1.000139
22500.0	433.8	-21.9	-32.7	36.6	601.3	617.6	309.6	13.2	1.000136
23000.0	424.9	-23.1	-35.0	32.4	591.7	616.2	312.7	12.3	1.000134

STATION ALTITUDE 3997.30 FEET MSL
23 APR. 79 1100 HRS MST
ASCENSION NO. 70

UPPER AIR DATA
113006070
S M R

GEODETIC COORDINATES
32.48034 LAT DEG
106.42307 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
23500.0	416.2	-24.2	-37.4	28.1	582.2	614.8	315.9	11.8	1.000131
24000.0	407.6	-25.1	-40.0	23.1	572.3	613.7	318.4	11.6	1.000129
24500.0	399.2	-25.4	-43.2	17.0	561.2	613.2	312.4	12.5	1.000126
25000.0	390.8	-26.7	-44.1	17.2	552.2	611.7	307.2	13.7	1.000124
25500.0	382.6	-27.9	-45.0	17.5	543.4	610.2	302.3	15.4	1.000122
26000.0	374.6	-29.1	-46.0	17.7	534.7	608.6	297.9	17.6	1.000120
26500.0	366.7	-30.3	-46.9	17.9	526.1	607.1	293.8	21.0	1.000118
27000.0	359.0	-31.5	-47.8	18.0	517.5	605.6	290.8	24.8	1.000116
27500.0	351.4	-32.6	-48.7	18.0	508.7	604.3	288.7	28.9	1.000114
28000.0	343.8	-33.7	-52.7	12.6**	500.3	602.8	287.4	28.7	1.000112
28500.0	336.5	-34.9	-60.3	5.5**	492.1	601.3	285.1	28.2	1.000110
29000.0	329.2	-36.2			483.9	599.7	279.9	27.6	1.000108
29500.0	322.0	-37.4			475.9	598.1	275.7	27.6	1.000106
30000.0	315.0	-38.7			468.0	596.5	272.4	27.9	1.000104
30500.0	308.1	-40.0			460.3	594.9	273.9	28.0	1.000103
31000.0	301.3	-41.2			452.7	593.3	275.1	28.8	1.000101
31500.0	294.6	-42.5			444.8	591.7	275.3	30.4	1.000099
32000.0	287.9	-43.7			437.1	590.1	274.5	31.8	1.000097
32500.0	281.4	-44.9			429.5	588.6	274.0	33.2	1.000096
33000.0	275.0	-46.1			422.0	587.0	274.3	34.5	1.000094
33500.0	268.8	-47.3			414.7	585.4	274.1	36.2	1.000092
34000.0	262.7	-48.6			407.5	583.8	274.6	36.5	1.000091
34500.0	256.8	-49.8			400.5	582.3	275.8	35.1	1.000089
35000.0	251.0	-51.0			393.6	580.7	278.4	32.7	1.000088
35500.0	245.2	-52.3			386.8	579.9	279.8	32.7	1.000086
36000.0	239.5	-53.7			380.2	577.1	280.3	33.7	1.000085
36500.0	233.9	-55.0			373.6	575.4	280.8	36.3	1.000083
37000.0	228.4	-55.9			368.3	574.2	283.7	39.5	1.000082
37500.0	223.0	-56.5			358.7	573.4	291.3	40.4	1.000080
38000.0	217.7	-56.7			350.4	573.2	292.5	44.7	1.000078
38500.0	212.6	-56.8			342.4	573.0	295.0	48.9	1.000076
39000.0	207.5	-57.0			334.5	572.8	299.0	48.9	1.000075
39500.0	202.6	-57.1			326.8	572.6			1.000073

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3997.30 FEET MSL
23 APR. 79 1100 HRS MST
ASCENSION NO. 70

MANDATORY LEVELS
113006007U
S M R

GEODETIC COORDINATES
32.48034 LAT DEG
106.42307 LON DEG

PRESSURE	GEOPOTENTIAL	TEMPERATURE		REL.HUM.	WIND DATA	
		AIR	DEWPOINT	PERCENT	DIRECTION	SPEED
MILLIBARS	FEET	DEGREES	CENTIGRADE		DEGREES(TN)	KNOTS
850.0	4939.	19.1	4.5	38.	183.9	2.9
800.0	6629.	13.5	2.9	49.	210.6	4.3
750.0	8401.	9.6	2.0	59.	234.5	8.5
700.0	10270.	6.1	-3.5	50.	217.4	7.1
650.0	12245.	1.0	-6.3	58.	220.0	7.0
600.0	14335.	-4.7	-10.7	63.	210.5	7.4
550.0	16562.	-8.9	-28.7	18.	278.6	11.7
500.0	18971.	-13.1	-30.3	22.	295.3	15.3
450.0	21577.	-19.4	-30.6	36.	300.3	16.4
400.0	24410.	-25.3	-43.1	17.	313.1	12.4
350.0	27541.	-32.7	-48.9	18.	288.5	29.1
300.0	31038.	-41.5			275.2	29.0
250.0	35012.	-51.2			278.8	32.4

STATION ALTITUDE 3997.30 FEET MSL
23 APR. 79 1100 HRS MST
ASCENSION NO. 70

MRN MANDATORY LEVELS
11300o0070
S M R

GEODETIC COORDINATES
32.48034 LAT DEG
106.42307 LON DEG

GEOPOTENTIAL ALTITUDE DECAMETERS	WIND DATA DIRECTION DEG (TN)	SPEED MPS	N-S MPS	E-W MPS	DEW PT DEP DEG C	TEMPERATURE AIR DEG C	PRESSURE MILLIBARS
1067.	279.	17.	-3.	16.	99	-51.2	2.500+2
946.	275.	15.	-1.	15.	99	-41.5	3.000+2
839.	288.	15.	-5.	14.	16	-32.7	3.500+2
744.	313.	6.	-4.	5.	18	-25.3	4.000+2
658.	300.	8.	-4.	7.	11	-19.4	4.500+2
578.	295.	8.	-3.	7.	17	-13.1	5.000+2
505.	279.	6.	-1.	6.	20	-8.9	5.500+2
437.	210.	4.	3.	2.	06	-4.7	6.000+2
373.	220.	4.	3.	2.	07	1.0	6.500+2
313.	217.	4.	3.	2.	10	6.1	7.000+2
256.	234.	4.	3.	4.	08	9.6	7.500+2
202.	211.	2.	2.	1.	11	13.5	8.000+2
151.	184.	2.	2.	0.	15	19.1	8.500+2